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ABSTRACT

An exploratory study of the contribution to learning of typical introductory and summarizing sequences in instructional films underlined the need for further experimental work to determine what kinds of introductory and concluding sequences are most useful in promoting learning from films. The first part of the study was concerned with film introductions. In it, three films were selected from 130 instructional films as having what seemed to be good introductory sequences. Two versions of each of the three films were prepared, one including the intoduction and one omitting it. Each film was shown to three comparable groups of high school students: a control group which did not see the film, a group which saw the film version without the introduction, and a group which saw the entire film. All the film groups gained higher scores than the control groups which did not see a film. However, the learning differences attributable to the films were small: positive for two films and negative for one. In evaluating the effect on learning of summary sequences, the same procedure was followed as in evaluation of the effect of introductory sequences, with similar results. (MF)

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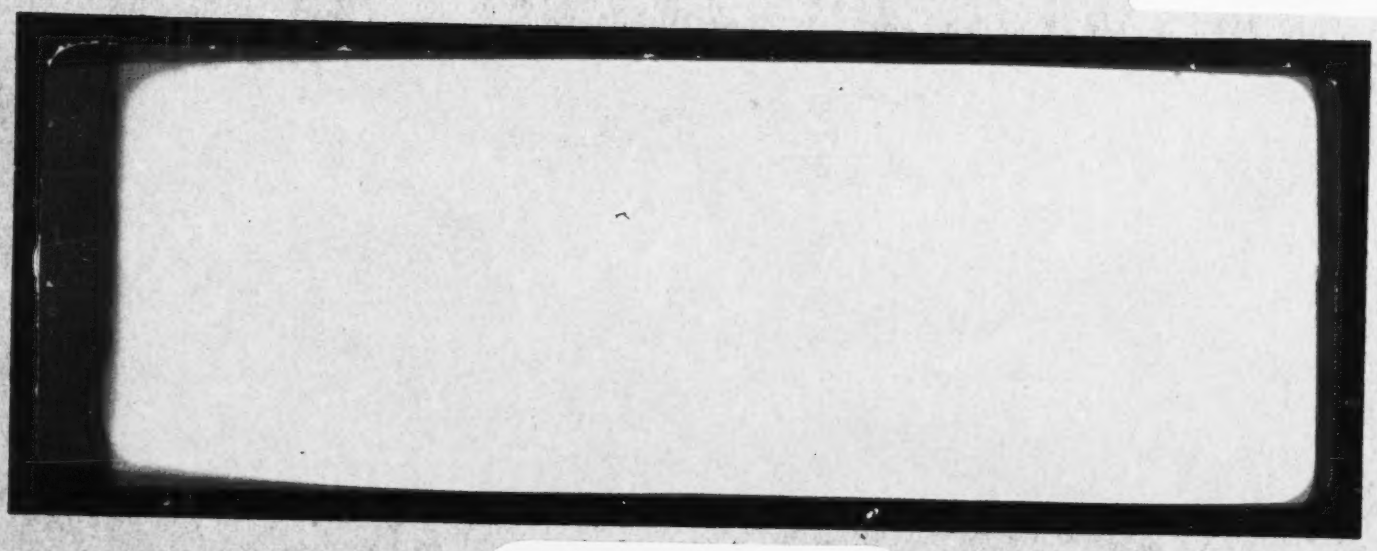

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TECHNICAL REPORT - SDC 269-7-8

CONTRIBUTIONS OF FILM INTRODUCTIONS AND FILM SUMMARIES TO LEARNING FROM INSTRUCTIONAL FILMS

(Rapid Mass Learning)

The Pennsylvania State College
Instructional Film Research Program
November 1949

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SUMMARY

Introduction

This exploratory study is concerned with investigating the contributions to learning of some typical introductory and summarizing sequences in existing instructional films. The study is divided into two parts. Part I deals with film introductions; part II deals with film summaries.

Part I Film Introductions

A film introduction is defined as that portion of a film, excluding the main and credit titles, which begins the presentation and runs up to the beginning of the body of the film.

One hundred and thirty instructional films from various sources were viewed and the introductory sequences were classified in terms of their probable functions, and the filmic techniques used. Eleven different functions and twelve different techniques were identified.

The Experiment. As a result of this initial survey, three films were chosen as having what seemed to be "good" introductory sequences. The problem was to determine how much these introductory sequences contributed to learning from the films.

Two versions of each film were prepared, one including the introduction, the other omitted it. The versions were shown to comparable groups of high school students, who were given multiple-choice objective tests on the factual information contained only in the body of each film. For each film there were three groups: a control group which did not see the film, a group which saw the film version without the introduction, and a group which saw the entire film.

Results. All the film groups gained higher scores than the control groups which did not see a film, indicating that learning resulted from seeing the films. However, the differences between the groups which saw the entire film and those which saw the film minus the introduction were quite small. For two of the films the introductions made small positive contributions to learning, while for the third film the introduction apparently had an adverse effect on learning, the difference between the experimental groups being - 2.55 (significant at the 0.2% level of confidence).

Part II Film Summaries

The procedure for Part II of this study is similar to that for Part I.

A film summary is defined here as a concluding sequence, produced as an integral and purposeful part of an educational film, which embraces one or more of the functions of review, recapitulation, statement of importance, or the issuing of a challenging note.

One hundred and thirty-one instructional films were viewed, and the summary sequences were classified in terms of their possible functions and the filmic techniques used. Six different functions and nine different filmic techniques were identified.

The Experiment. Three films were chosen as having what appeared to be "good" summary sequences. As in the first part of this study, two versions of each film were prepared--one with the summary included, one with it omitted. The same kind of testing procedure as was used in Part I was followed in this part of the study.

Results. All the film groups gained considerably higher scores than the control groups which did not see the films, indicating that learning occurred. For all three films the summary sequences made small positive contributions to learning. However, only one of these differences was statistically significant.

Conclusions

This exploratory survey has opened up a number of problems relating to the effectiveness of various kinds of introductory and concluding sequences in films. For the films studied the introductions and summaries made small positive contributions to learning, with one exception. This exception, in which the introduction produced an adverse effect on learning, underlines the need for further experimental work to determine what kinds of introductory and concluding sequences will be most useful in promoting learning from films.

PART I: CONTRIBUTIONS OF FILM INTRODUCTIONS TO LEARNING FROM INSTRUCTIONAL FILMS[1]

C. W. Lathrop, Jr.

STATEMENT OF THE PROBLEM

Introduction

There is a certain amount of evidence to suggest that an oral introduction to a film for the purpose of orienting and motivating the audience, results in more learning. This raises the questions: (1) Is the introduction as provided within the usual instructional film equally valuable; (2) if not, can it be improved; and (3) what functions can it be expected to perform? These questions are especially important relative to instructional tasks which are to be accomplished by sound motion pictures exclusively.

This study is primarily concerned with investigating the contributions to learning of some typical introductory sequences in extant instructional films.

Definition of Terms

A Film Introduction is defined as that portion of a film, excluding the main and credit titles, which begins the presentation, and runs up to the beginning of the body of the film.

The possible functions of an introduction to a film may be classified under the following 11 headings:

1. Stresses the importance of the material in the film.

2. Stresses the consequences if the material in the film is not learned. (For example, "If you don't pay close attention to this film the lives of your buddies might be endangered.")

3. Introduces the characters to appear in the film.

4. Poses the problem to be dealt with in the film.

5. Sets the stage, that is, orients the audience to the scene of the action.

6. Points out important features which will be developed in the film and to which the audience should pay

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1. This report is based on a thesis submitted in partial fulfillment of requirements for the degree of Master of Arts at the Pennsylvania State College, June 1949.

special attention.

7. Gets attention of the audience by some dramatic device.

8. Shows the trainee the relevance of the material in the film to what he has learned previously.

9. Explains to the instructor the situation for which the film is intended.

10. Provides additional inspiration which might motivate the student or trainee to undertake further activities after seeing the film.

11. Shows the purpose of the film. (Probably one of the most important functions of an introduction is to tell the student exactly what the film is about.)

The filmic techniques which may be used to attain these objectives may also be classified:

1. Live action (simple movement as from real life.

2. "Dramatic" live action (action used with dramatic effect)

3. Use of models (scale representations)

4. Animation

5. Flashes forward (short shots of scenes to follow are included in the introduction)

6. Titles to explain the film, etc.

7. Remarks by an authority on the subject

8. Narration by an off-stage commentator

9. Demonstration of a task being performed

10. Slow motion or speeded motion

11. Diagrams, still shots, tables, graphs

12. Audience participation (as in asking a question and allowing time for an answer)

PROCEDURE

Review of Film Introductions

One hundred and thirty instructional films with

introductions were viewed, and were analyzed and classified as to the following characteristics:

1. Length of the introductory sequences

2. Length of the entire film

3. Classification of film subject matter

4. Identification of the functions or objectives of the introduction

5. Identification of the filmic techniques used in the introduction

A check sheet was prepared to record each film analysis.

For the sake of convenience and uniformity the survey was restricted to films in the 8-13 minute time range.

Table I gives the classification of film introductions in terms of their functions, Table II shows the range of film techniques used, and Table III the lengths of the introductions in relation to total film length.

TABLE I

NUMBER OF FILM INTRODUCTIONS USING EACH OBJECTIVE

Objective	Producers* Coronet	EBF	CNFB	Castle	YAF	Others
Number of Films Analyzed	42	25	10	10	8	35
Stresses Importance	36	20	7	8	5	26
Stresses Consequence	3	-	-	1	-	3
Introduces Characters	32	9	7	8	3	20
States Problem	24	22	5	10	5	24
Sets Stage	13	5	5	-	3	16
Points out Important Features	1	2	1	-	1	2
Gets Attention	6	-	-	1	-	2
Shows Relevance to the Trainee	1	-	-	2	-	1
Explains to Instructor Situation for which Film was Intended	-	-	-	1	-	-
Additional Inspiration	-	-	-	-	-	1
Shows Purpose of the Film	-	-	-	-	-	-

* Producers:
EBF - Encyclopaedia Britannica Films
CNFB - Canadian National Film Board
YAF - Young America Films

TABLE 2

NUMBER OF FILM INTRODUCTIONS USING EACH TECHNIQUE

Film Technique	Producers* Coronet	EBF	CNFB	Castle	YAF	Others
Number of Films Analyzed	42	25	10	10	8	35
Dramatic Live Action	-	1	-	-	-	-
Live Action	41	21	6	10	5	31
Models	1	2	5	-	2	1
Animation	-	3	4	-	1	6
Flashes Forward	4	1	-	-	-	-
Titles	4	-	-	-	1	3
Authority	-	2	-	-	-	3
Narrator	42	23	10	10	8	32
Demonstration	8	5	-	7	2	8
Slow Motion	2	-	-	-	-	-
Diagrams	7	7	-	-	1	3
Audience Participation	-	-	-	-	-	-

* Producers
EBF - Encyclopaedia Britannica Films
CNFB - Canadian National Film Board
YAF - Young America Films

TABLE 3

RELATIVE LENGTHS OF INTRODUCTIONS TO TOTAL FILM FOOTAGES

		Producers*					
		Coronet	EBF	CNFB	Castle	YAF	Others
Number of Films Analyzed		42	25	10	10	8	35
Total Footage	Range	324-450	324-396	360-450	288-459	288-423	288-423
	Average	378	371	385	365	357	373
Introduction as Percentage of Total Footage	Range	3.62-32.44%	4.76-38.10%	7.89-39.94%	3.92-37.50%	7.09-36.94%	5.13-41.03%
	Average	12.54%	16.35%	21.75%	17.62%	13.71%	15.38%

*Producers:

EBF - Encyclopaedia Britannica Films
CNFB - Canadian National Film Board
YAF - Young America Films

The Films Used in the Experiment

The experiment proper was concerned with measuring the effect on learning of the introductory sequences of several typical instructional films.

The three films finally chosen as having what seemed to be the best available introductions were: (1) Sulphur and its Compounds, (2) Mammals of the Rocky Mountains, and (3) Rivers of the Pacific Slope.

Their characteristics are given in Table 4

TABLE 4

CHARACTERISTICS OF FILMS USED IN THE EXPERIMENT

Title	Total Film Length	Length of Introduction	Functions of Introduction	Film Technique used in Introduction	Subject Type
Sulphur and its compounds	387 ft. 10 min. 45 sec.	65 sec. 10.1% of total	(1) Stressing importance (2) Introducing characters (3) Setting the stage	(1) Live action (2) Models (3) Title (4) Narration	general science-chemistry
Mammals of the Rocky Mountains	369 ft. 10 min. 15 sec.	45 sec. 7.3% of total	(1) Setting the stage	(1) Live action (2) Animation (3) Narration	general science-biology
Rivers of the Pacific Slope	414 ft. 11 min. 30 sec.	25 sec. 3.6% of total	(1) Stressing importance (2) Setting the stage (3) Posing the problem	(1) Live action (2) Narration	general science-geography

Two experimental versions were prepared for each of the three films: Version I was the complete film; Version II was the same film minus the introductory sequence only. The preparation of the "no introduction" versions was a comparatively easy matter as, in each film, there was a fade-

out of the visuals and a break in the sound track between the credit titles and the introduction, and between the introduction and the main body of the film. The main title and credit titles were included in both versions of each film.

The Tests

Tests were constructed on the material in each of the three films, bearing on the facts in the body of the film only; no questions were asked on the facts contained only in the introduction. Multiple-choice test questions each with four choices were asked on three different classes of facts in the films:

(1) the facts contained in the visuals only
(2) the facts contained in the sound track only
(3) the facts found in both the visuals and sound track

Pilot-runs were made to check the validity and reliability of the tests, and poor questions were eliminated. Each test finally included from 50 to 60 items.

Test Population

Approximately 500 ninth grade high school students from the Lewistown and Lock Haven, Pa., High Schools took part in the experiment. Good cooperation from the schools made it possible to achieve a practical degree of randomization of the entire ninth grade population in each school into three groups. This was done by taking alphabetical lists of boys and girls respectively, and assigning students in rotation to experimental groups 1, 2, and 3. This procedure also gave a uniform number of boys and girls in each group.

One group acted as a control group and took the test without seeing a film. The second group saw the complete film (Version I), while the third group saw the "no-introduction" version (Version II). The groups were rotated so that each group became a different experimental group for each of the three films. Thus, each group acted as a control group for one film, as a groupseeing the version without the introduction for another, and finally, as a group seeing the entire film for the third. The groups were also rotated with respect to projection rooms and test administrators.

The test followed immediately upon the film-showing. Twenty-five minutes were allowed for its completion. Thus a single forty-five minute period provided ample time for showing a film, and giving the test.

SUMMARY OF RESULTS

The question to be answered in this experiment is: What contributions do the introductory sequences in these films make to learning?

TABLE 5

SUMMARY OF TEST SCORES

"Sulfur and Its Compounds"

	Control Group (No Film)	Film minus Introduction Group	Complete film Group
Number of Subjects	168	166	168
Mean Score	16.97	21.61	22.75
Standard Deviation	3.43	5.45	5.36
Standard Error of The Mean	.27	.42	.42

TABLE 6

SUMMARY OF TEST SCORES

"Mammals of the Rocky Mountains"

	Control Group (No Film)	Film Minus Introduction Group	Complete Film Group
Number of Subjects	168	171	174
Mean Score	22.55	31.23	28.68
Standard Deviation	4.93	7.27	6.63
Standard Error of the Mean	.38	.56	.50

TABLE 7

SUMMARY OF TEST SCORES

"Rivers of the Pacific Slope"

	Control Group (No Film)	Film minus Introduction Group	Complete Film Group
Number of Subjects	165	167	164
Mean Score	16.23	22.96	24.77
Standard Deviation	4.10	5.95	6.70
Standard Error of the Mean	.32	.46	.53

These results indicate that the groups which saw the experimental films generally did somewhat better than the control groups which did not see the films. However the differences between the groups which saw the entire film, and those which saw the film minus the introduction were small. For two films the introductions apparently made small positive contributions ("Sulfur and Its Compounds" $\neq$ 1.14*, "Rivers of the Pacific Slope" $\neq$ 1.81**), while for the third film, "Mammals of the Rocky Mountains" the introduction apparently had an adverse effect on learning, the difference between the experimental groups being -2.55***. This latter unexpected result was carefully checked and proved to be authentic.

CONCLUSIONS

The results indicate that among existing films, typical introductory sequences can make small positive contributions to learning, while in other instances introductions may have an adverse effect on learning, possibly through misdirecting the student's attention.

This shows that there is an urgent need for an experimental approach to the problems of producing film introductions, based on sound learning principles, which will make positive contributions to learning. These should help to offset shortcomings in methods of presentation when using films to supplement instruction, or as an exclusive means of instruction. The next step inthis direction could be an evaluation of the relative importance of the different functions which a film introduction might perform.

* Significant at the 6% level of confidence
** Significant at the 1% level of confidence
*** Significant at the 0.2% level of confidence

PART II: CONTRIBUTIONS OF FILM SUMMARIES TO LEARNING FROM INSTRUCTIONAL FILMS [1].

C. A. Norford

STATEMENT OF THE PROBLEM

Introduction

This study parallels the first part of research project 17 which investigated the effects of film introductions on learning from films. It is an attempt to evaluate the effectiveness of the summary in some typical instructional films, and to suggest what functions the film summary might be expected to perform in order to improve the film as an instructional tool.

Definition of Terms

The term "Film Summary" as used here, means a concluding sequence produced as an integral and purposeful part of the educational sound motion picture, which embraces one or more of the functions of review, recapitulation, statement of importance, and/or the issuing of a challenging note; it may also contain an "application" of the information, or contain new information not previously given in the film.

The film summary is usually preceded by a fade in the visuals, and a natural break in the sound track, which separates it from the body of the film proper. It does not include THE END title.

This investigation seeks answers to the following questions:

(1) What functions can film summaries be expected to perform?

(2) Which of these functions are performed most frequently by film summaries as currently produced?

(3) What film techniques are used most frequently to present summaries?

(4) What are the common practices in regard to length of film summaries in relation to the whole film?

(5) Are typical films with summaries as now produced, more effective as instructional tools than they would be without the summaries?

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1. This report is based on a thesis submitted in partial fulfillment of requirements for the degree of Master of Arts at the Pennsylvania State College, June 1949.

PROCEDURE

As a starting point a survey was made by questioning educators and psychologists, to determine the possible functions a film summary might be expected to fulfill. These may be classified under 6 main headings:

(1) Review - a mere topical outline of the film; a brief restatement of the organization of the film rather than of its informational content.

(2) Recapitulation - a brief repetition or restatement of the principal points in the film.

(3) Importance - Stressing the value of the information in the film to the viewer personally.

(4) Challenging note - the issue of a challenge to the viewer to apply the information in the film, or to seek further information, or undertake other activities. This heading would also include the posing of questions for thought or discussion.

(5) Application - the illustration of a point of information by a concrete example.

(6) New Information - the summary may contain information not previously given in the film, or it may relate the film to new material to follow.

The film techniques used in the presentation of film summaries were also listed as follows:

(1) Music - musical background behind commentary.

(2) Animation - use of drawings and charts, etc. involving movement.

(3) Narration - the off-stage voice of a narrator.

(4) Lip-synch - a person on the screen speaking, with synchronous recording of the speech.

(5) Live Action - simple movement as from real life.

(6) Still shots - photographs or drawings without movement.

(7) New Scenes - scenes not shown previously in the film.

(8) Flash backs - the reshowing of parts of scenes used in the body of the film.

(9) Questions - Asking questions, either by titles, or narration.

Review of Film Summaries

A survey of 131 one-reel instructional films was made, and 87 which included summaries were analyzed in detail and classified according to function, film techniques used, and length of summary in relation to total length. This information is presented in Tables 1, 2, and 3.

The Films Used in the Experiment

For use in the experiment to evaluate the effectiveness of the film summaries in some typical instructional films, the following films were selected:

(1) The Cell: Structural Unit of Life

(2) Magnetism

(3) Rivers of the Pacific Slope

These films appeared to contain examples of the best available summaries when considered in terms of current production practices.

The characteristics of these films are given in Table 4.

TABLE 1

FILM SUMMARIES CLASSIFIED BY FUNCTION AND PRODUCERS

Producer	Number of Films With Summaries	Number of Summaries Fulfilling Each Summary Function: Review	Recapitulation	Application	Importance	Challenging Note	New Information
Coronet	27	23	17	16	16	16	5
Encyclopaedia Britannica	20	13	6	14	14	8	6
Young America	6	3	3	4	3	3	1
Canadian Film Board	6	5	4	5	6	6	1
Hawley Lord	3	0	0	0	1	3	0
U. S. Office of Education	3	2	1	3	2	2	1
Army Signal Corps	3	3	2	3	1	0	0
Office of War Information	3	2	0	2	3	3	1
U. S. Coast Guard	2	1	1	2	2	2	0
Mahnke Productions	2	2	2	2	2	2	0
The Pennsylvania State College	1	0	0	0	1	1	0
McGraw-Hill Text	1	1	0	1	1	0	1
Metro Goldwyn Mayer	1	1	0	1	1	1	1
General Electric	1	1	1	0	0	0	0
Brandon Productions	1	1	1	1	1	1	1
French National Library	1	1	0	0	0	1	1
Edited Films, Inc.	1	1	0	0	0	0	0
Radio Corporation America	1	1	0	1	0	1	0
Columbia	1	1	1	0	0	1	0
Office of Coordinator of Inter-American Affairs	1	1	1	0	0	0	0
Burton Holmes	1	1	1	1	1	1	0
Teaching Aids Exchange	1	1	1	1	1	0	0
TOTALS	87	65	42	57	56	52	19
Per Cent of 87 Films		75%	46%	65%	64%	58%	22%

TABLE 2

FILM SUMMARIES CLASSIFIED BY FILM TECHNIQUES USED

Producer	Number of Films With Summaries	Music	Animation	Commentary	Live Action	Still Shots	Lip Sync	New Scenes	Flash-backs	Questions
Coronet	27	4	1	25	27	0	3	15	23	6
Encyclopaedia Britannica	20	2	5	19	20	1	1	13	12	0
Young America	6	5	2	5	5	1	1	5	3	1
Canadian Film Board	6	3	0	6	6	0	0	5	3	1
Hawley Lord	3	0	0	3	3	0	0	2	2	0
U. S. Office of Education	3	0	0	3	3	0	0	2	3	0
Army Signal Corps	3	0	0	3	3	0	0	0	3	0
Office of War Information	3	1	0	3	3	0	0	2	1	1
U. S. Coast Guard	2	0	0	2	2	1	0	0	2	0
Mahnke Productions	2	1	1	2	2	0	0	1	2	0
The Pennsylvania State College	1	0	0	1	1	0	0	0	1	0
McGraw-Hill Text	1	1	0	1	1	0	0	1	1	0
Metro Goldwyn Mayer	1	0	0	1	1	0	0	1	1	0
General Electric	1	0	0	1	1	0	0	0	1	0
Brandon Productions	1	0	1	1	1	0	0	1	0	0
French National Library	1	0	0	1	1	0	0	1	1	0
Edited Films, Inc.	1	0	0	1	1	0	0	1	0	0
Radio Corporation America	1	0	0	1	1	0	0	1	1	0
Columbia	1	1	0	1	1	0	0	1	0	0
Office of Coordinator of Inter-American Affairs	1	1	0	1	1	0	0	1	1	0
Burton Holmes	1	0	0	1	1	0	0	1	1	0
Teaching Aids Exchange	1	0	0	1	1	0	0	0	1	0
TOTALS	87	19	10	83	86	3	5	55	62	9
Per Cent of 87 Films		21%	11%	95%	98%	3%	6%	63%	71%	10%

TABLE 3

RELATIVE LENGTHS OF FILM SUMMARIES TO TOTAL FILM FOOTAGES

Producer	Number of Films	Total Footage Range	Total Footage Mean	Per Cent Summary Footage Range	Per Cent Summary Footage Mean
				%	%
Coronet	27	342 -411.6	387	1.6-15.5	7.2
Encyclopaedia Britannica	20	351 -405.6	384.6	.8-14.0	4.6
Young America	6	333 -389.4	352.2	.9-16.4	8.7
Canadian Film Board	6	354 -453	385.5	2.6-18.8	6.2
Hawley Lord	3	354.3-381	366.8	.8- 8.2	3.8
U. S. Office of Education	3	357 -447	401	.5- 4.5	3.0
Army Signal Corps	3	309 -417	363.8	7.9-17.2	12.4
Office of War Information	3	298.8-383.4	348.4	.6-21.0	8.0
U. S. Coast Guard	2	369 -423	396	4.1-15.7	9.9
Mahnke Productions	2	384 -387	385.5	21.6-24	6.0
The Pennsylvania State College	1		324		3.1
McGraw-Hill Text	1		328.2		9.6
Metro Goldwyn Mayer	1		378		6.0
General Electric	1		363		3.3
Brandon Productions	1		378.6		23.1
French National Library	1		330		6.4
Edited Films, Inc.	1		333		1.8
Radio Corporation America	1		456		3.9
Columbia	1		390		4.2
Office of Coordinator of Inter-American Affairs	1		390		13.8
Burton Holmes	1		365.4		6.6
Teaching Aids Exchange	1		347.4		8.6

TABLE 4

CHARACTERISTICS OF THE FILMS USED IN THE EXPERIMENT

Title	Total Film Length	Length of Summary	Function of Summary	Film Technique Used in Summary	Subject Type
The Cell: Structural Unit of Life	370 ft. 10 min. 15 sec.	1 min. 15 sec. 12.2% of total	Review Recapitulation Stresses Importance Challenging Note New Information	Music Animation Narration Flashbacks Live Action	General Science - Biology
Magnetism	398 ft. 11 min. 4 sec.	1 min. 5 sec. 9.8% of total	Review Recapitulation Application Stresses Importance New Information	Music Narration Live Action Lip Synch New scenes Flash-backs	General Science- Basic Principles of Magnetism
Rivers of the Pacific Slope	387 ft. 10 min. 45 sec.	1 min. 24 sec. 13.0% of total	Review Recapitulation Application Importance Challenging Note	Music Animation Commentary Live Action Flash-backs	General Science- Geography

For each of the three films, two experimental versions were prepared: I. The complete film; II. The same film minus the summary sequence only. The end title was retained in each version.

The Tests

Tests were constructed which were based on the information in the body of the film, and not on items appearing only in the summary. Multiple-choice questions with four alternatives were used, together with a proportion of true-false questions. A pilot study was made to determine the validity of the three tests, and the tests were revised and proved for use in the final study.

The test on The Cell contained 58 questions, 11 of which were true-false; the test on Magnetism contained 60 questions, eight of which were true-false; and the test on Rivers of the Pacific Slope contained 52 questions, all of which were of the multiple-choice type.

Test Population

Five hundred and sixty-one ninth grade students from three Pennsylvania high schools (Carlisle, Mechanicsburg and Hershey) were tested in this experiment. Good cooperation by the schools made it possible to achieve a practical degree of randomizing by splitting the entire ninth grade population of each school into three experimental groups. The same technique for randomizing used in Part I of this project, was also used here.

As in the study of Film Introductions, one group acted as a control group and took the test without seeing a film, while a second group saw the complete film (Version I), and the third group saw the film minus the summary (Version II).

The groups were rotated so that each group became a different experimental group for each of the three films. The rooms for film showings, and the test administrators were also rotated to distribute any differences which may have arisen from these variables.

The test followed immediately on each film showing, and thirty minutes were allowed for its completion. A single forty-five minute period allowed sufficient time for showing the film and administering the test.

SUMMARY OF RESULTS

The question which this experiment sought to answer was: What effects did the summary sequences in these three films have on learning?

TABLE 5

SUMMARY OF TEST SCORES

"THE CELL: STRUCTURAL UNIT OF LIFE"

	Control Group (No Film)	Film minus Summary Group	Complete Film Group
Number of subjects	192	184	185
Mean Score	24.67	33.00	33.57
Standard Deviation	5.65	7.19	8.52
Standard Error of the Mean	.41	.53	.63

TABLE 6

SUMMARY OF TEST SCORES

"MAGNETISM"

	Control Group (No Film)	Film minus Summary Group	Complete Film Group
Number of Subjects	184	185	192
Mean Score	32.94	37.00	38.93
Standard Deviation	8.99	8.66	8.57
Standard Error of the Mean	.66	.64	.62

TABLE 7

SUMMARY OF TEST SCORES

"RIVERS OF THE PACIFIC SLOPE"

	Control Group (No Film)	Film minus Summary Group	Complete Film Group
Number of subjects	185	192	184
Mean Score	17.10	24.95	25.25
Standard Deviation	4.34	6.86	6.30
Standard Error of the Mean	.32	.50	.47

These results indicate that the groups which saw the films did definitely better on the tests than the control groups which did not see the films. The differences were small between the groups which saw the complete films, and those which saw the films minus the summaries. For all three films the summaries apparently made small positive contributions to learning, the differences in favor of the films with summaries being as follows:

The Cell: Structural Unit of Life	≠ .573
Magnetism	≠1.92 *
Rivers of the Pacific Slope	≠ .30

It should be noted that only one of these differences (For the film Magnetism) reaches accepted levels of statistical significance.

CONCLUSIONS

The results suggest that these films, which include what seemed to be the best available summary sequences as produced today, are not materially better than they would be without the summaries.

In view of the fact that a review or summary of a lesson is generally accepted as being beneficial to learning, it is reasonable to assume that better results should be expected to accrue from film summaries.

This suggests the urgent need for some experimental work on the problems of producing film summaries, based on established learning principles, which will be more effective aids to learning, than the film summaries which were tested

* Significant at the 3% level of confidence

in this experiment.

As a final comment it might be observed that the failure of the summaries to have any noticeable effect on learning in this experiment, could perhaps be a result of the fact that these films are so tightly packed with factual information (a 60 item test was constructed on each 10 minute film with comparative ease). Thus the level of learning was comparatively low, and it is possible that the summaries could add little.